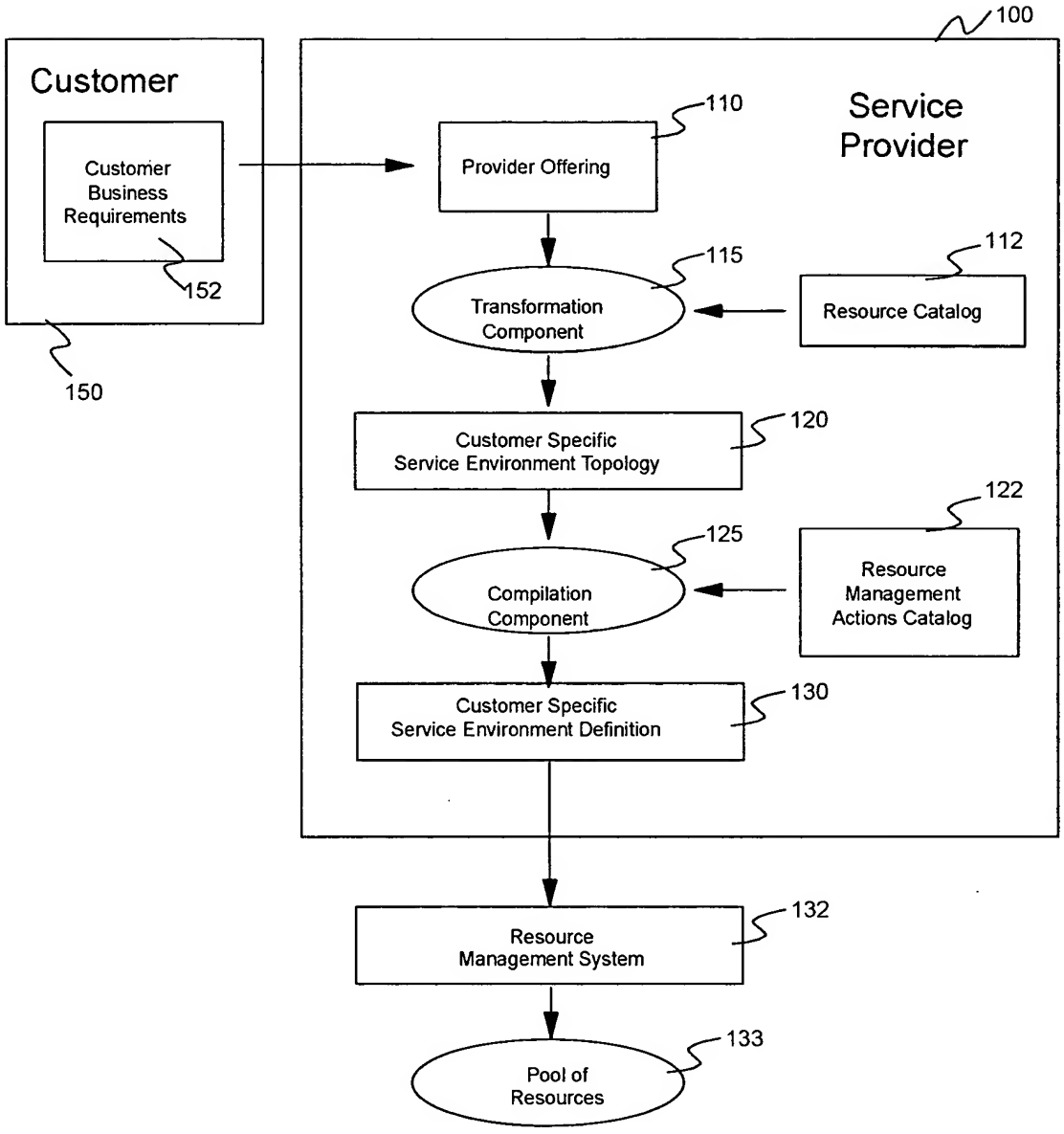
100
Customer
Customer Business Requirements
152
150
Service Provider
110
Provider Offering
115
Transformation Component
112
Resource Catalog
120
Customer Specific Service Environment Topology
122
125
Compilation Component
Resource Management Actions Catalog
130
Customer Specific Service Environment Definition
132
Resource Management System
133
Pool of Resources

FIG. 1

The following example shows a sample extract of a XML file which describes an aggregate resource type.

```
<?xml version="1.0" encoding="UTF-8"?>
<resourcetype>
        <identification>
                <name>SECURE WEBSERVER</name>
        </identification>
        <expansion>
                <node>
                        <identification>
                                <name>HTTP FIREWALL</name>
                        </identification>
                </node>
                <node>
                        <identification>
                                <name>STANDARD WEBSERVER</name>
                        </identification>
                </node>
        </expansion>
</resourcetype>
```

FIG. 2A

The following example shows a sample extract of a XML file which describes a base resource type.

```
<?xml version="1.0" encoding="UTF-8"?>
<resourcetype>
        <identification>
                <name>HTTP FIREWALL</name>
        </identification>
        <partWSDL>
                <wsdlURL>http://localhost:8080/
                        FirewallServiceProvider.wsdl</wsdlURL>
        </partWSDL>
</resourcetype>
```

FIG. 2B

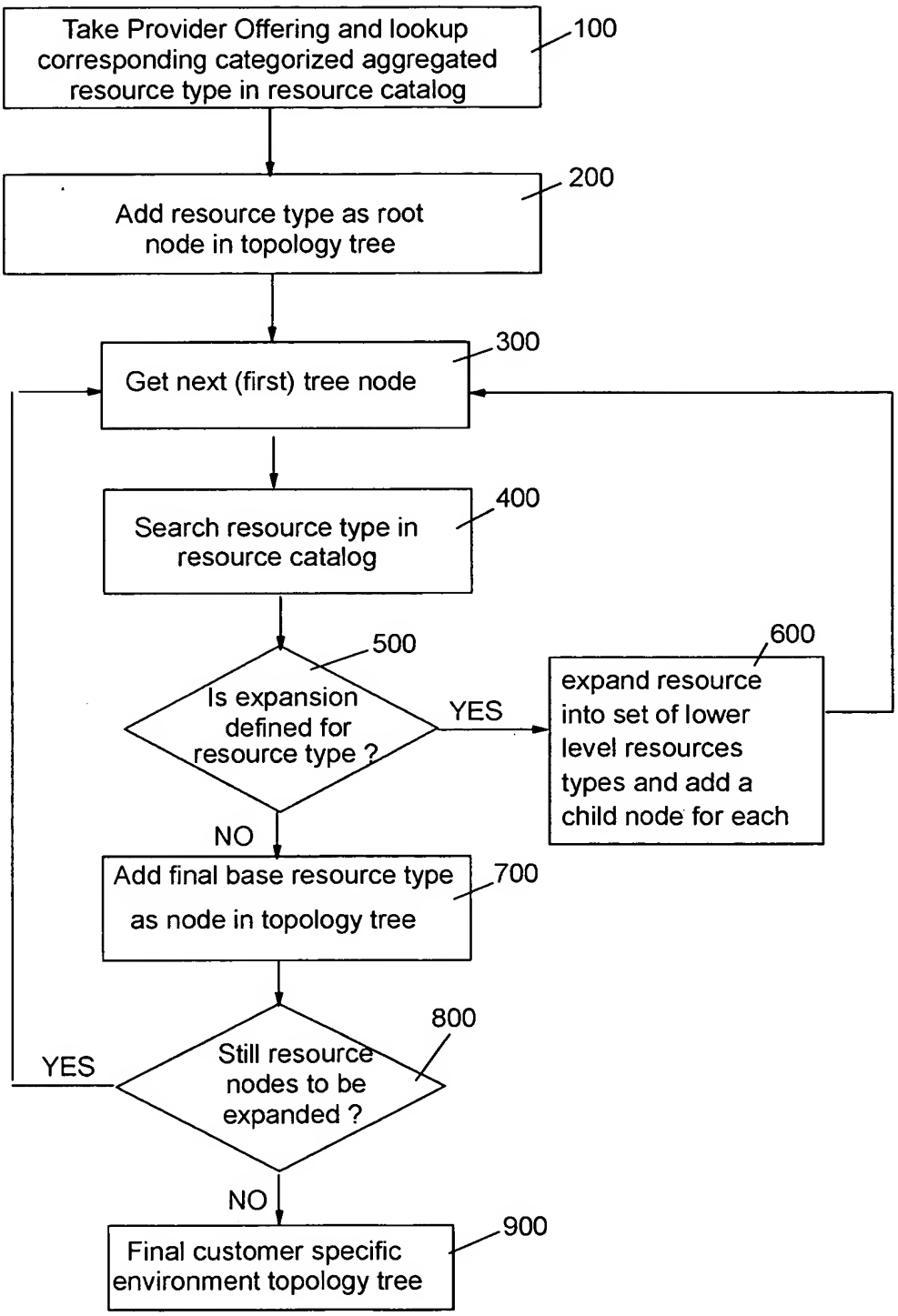
Take Provider Offering and lookup corresponding categorized aggregated resource type in resource catalog
100
Add resource type as root node in topology tree
200
Get next (first) tree node
300
Search resource type in resource catalog
400
Is expansion defined for resource type ?
500
YES
expand resource into set of lower level resources types and add a child node for each
600
NO
Add final base resource type as node in topology tree
700
Still resource nodes to be expanded ?
800
YES
NO
Final customer specific environment topology tree
900

FIG. 3

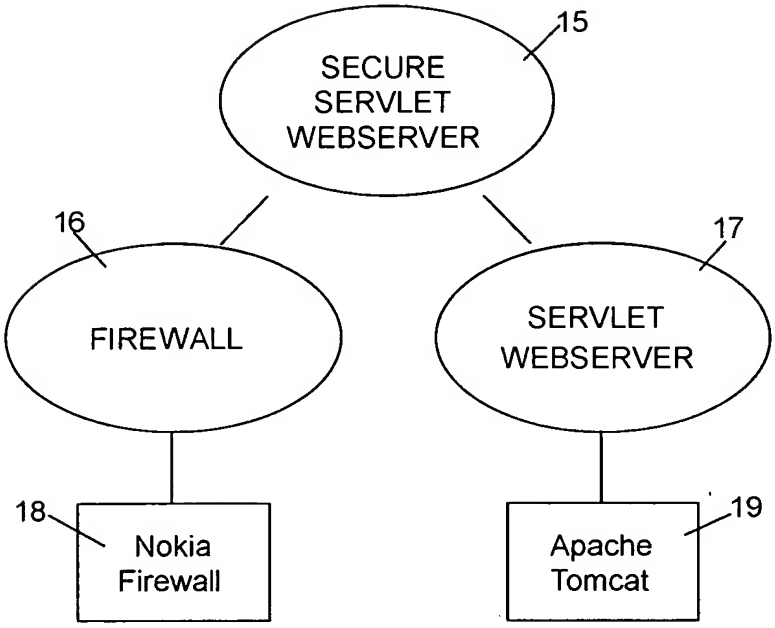
SECURE
SERVLET
WEBSERVER
15
16
FIREWALL
17
SERVLET
WEBSERVER
18
Nokia
Firewall
19
Apache
Tomcat

FIG. 4

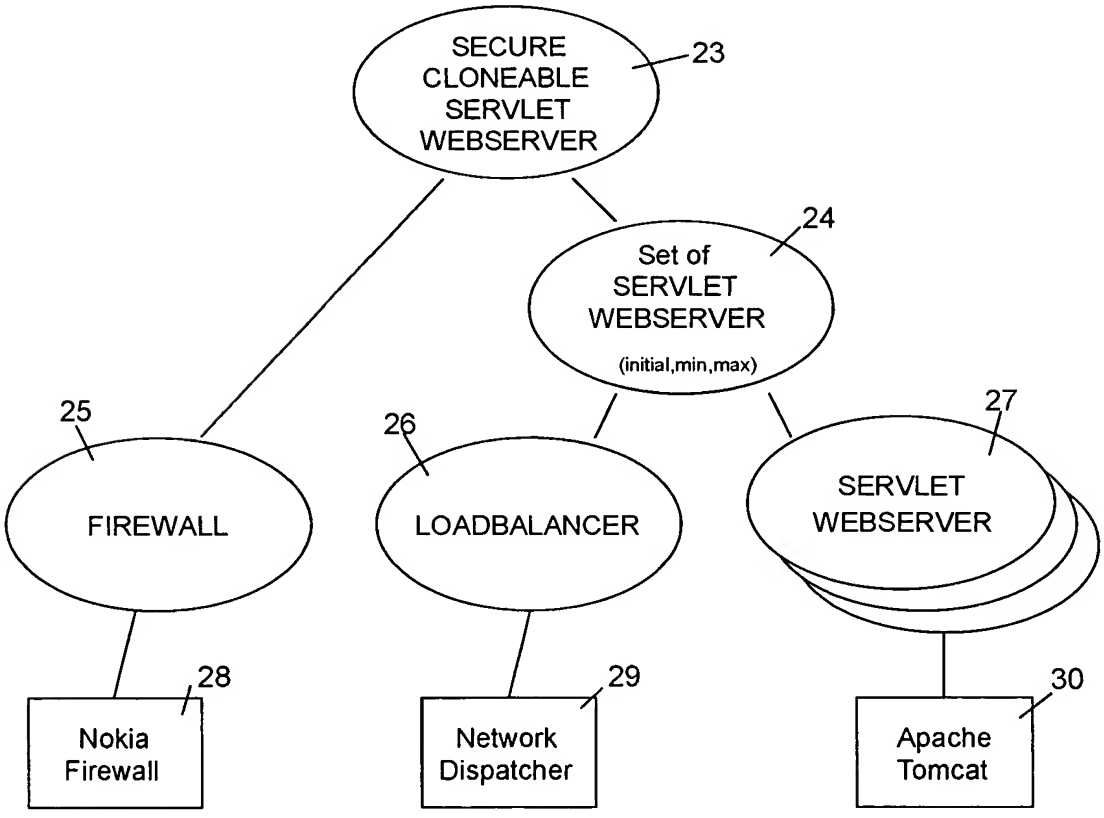
SECURE
CLONEABLE
SERVLET
WEBSERVER
23
24
Set of
SERVLET
WEBSERVER
(initial,min,max)
25
FIREWALL
26
LOADBALANCER
27
SERVLET
WEBSERVER
28
Nokia
Firewall
29
Network
Dispatcher
30
Apache
Tomcat

FIG. 5

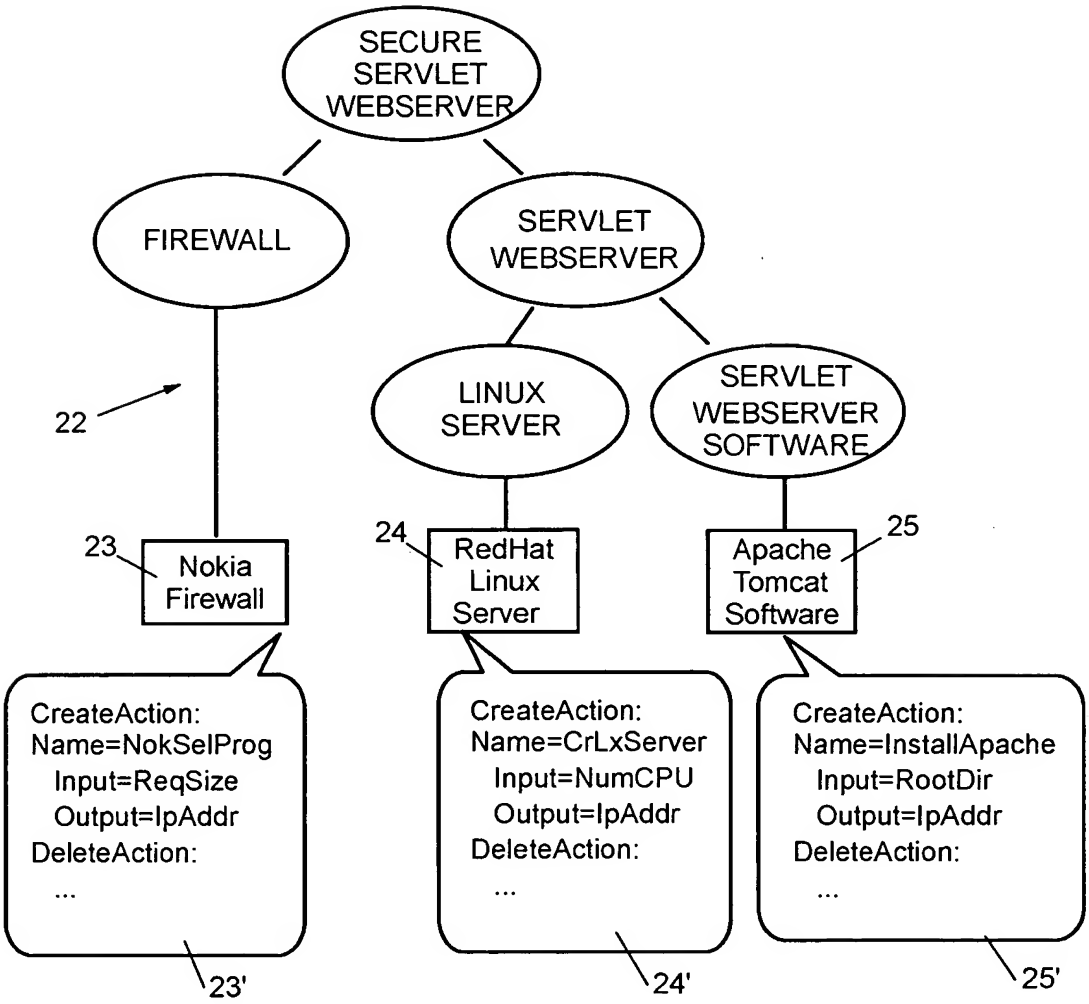
SECURE SERVLET WEBSERVER
FIREWALL
SERVLET WEBSERVER
22
LINUX SERVER
SERVLET WEBSERVER SOFTWARE
23
Nokia Firewall
24
RedHat Linux Server
25
Apache Tomcat Software
CreateAction:
Name=NokSelProg
Input=ReqSize
Output=IpAddr
DeleteAction:
...
23'
CreateAction:
Name=CrLxServer
Input=NumCPU
Output=IpAddr
DeleteAction:
...
24'
CreateAction:
Name=InstallApache
Input=RootDir
Output=IpAddr
DeleteAction:
...
25'

FIG. 6A

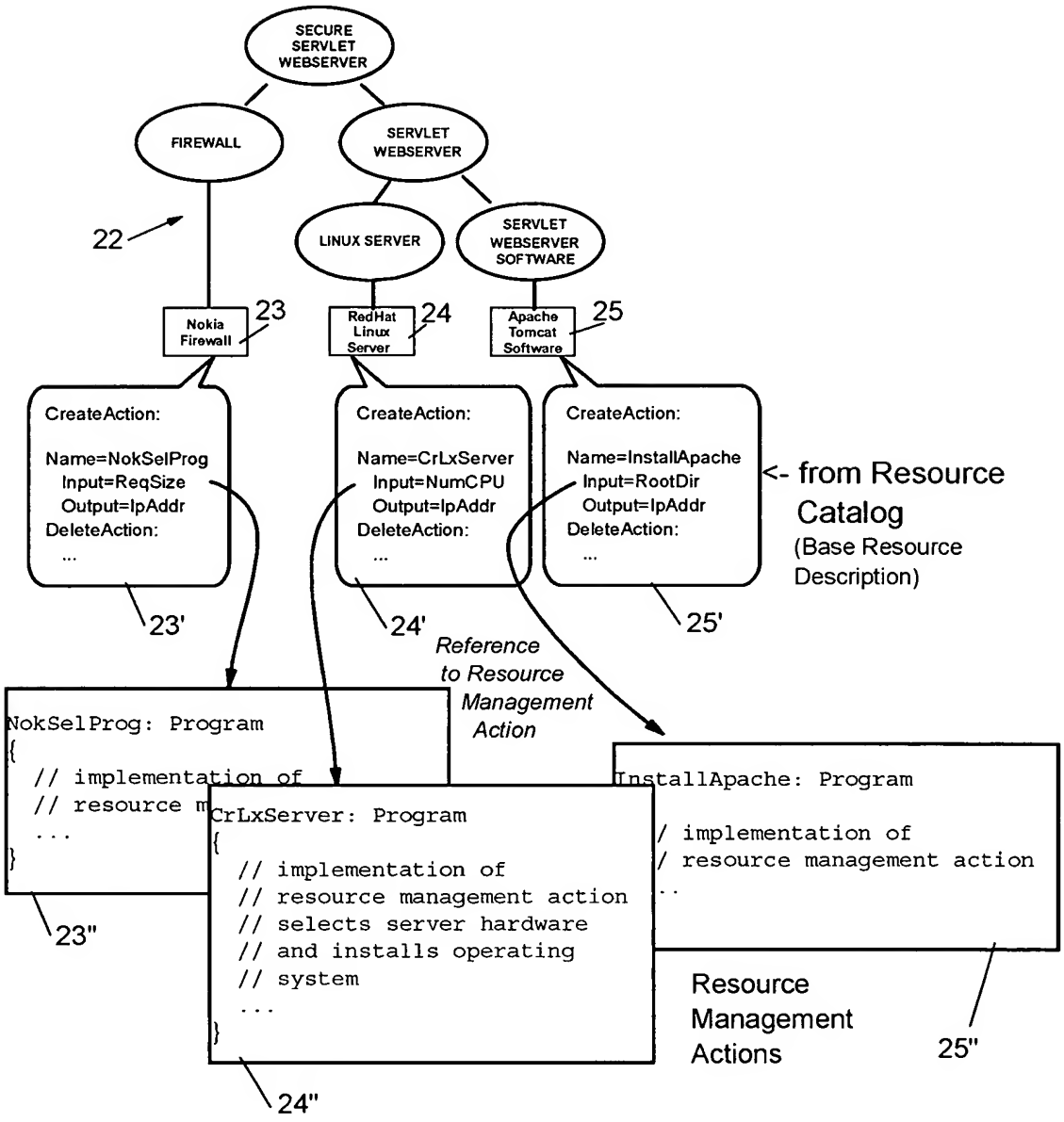
SECURE SERVLET WEBSERVER
FIREWALL
SERVLET WEBSERVER
22
LINUX SERVER
SERVLET WEBSERVER SOFTWARE
Nokia Firewall
23
RedHat Linux Server
24
Apache Tomcat Software
25
CreateAction:
Name=NokSelProg
Input=ReqSize
Output=IpAddr
DeleteAction:
...
23'
CreateAction:
Name=CrLxServer
Input=NumCPU
Output=IpAddr
DeleteAction:
...
24'
CreateAction:
Name=InstallApache
Input=RootDir
Output=IpAddr
DeleteAction:
...
25'
<- from Resource Catalog
(Base Resource Description)
Reference to Resource Management Action
NokSelProg: Program
{
// implementation of
// resource m
...
}
23"
CrLxServer: Program
{
// implementation of
// resource management action
// selects server hardware
// and installs operating
// system
...
}
24"
InstallApache: Program
/ implementation of
/ resource management action
..
Resource Management Actions
25"

FIG. 6B

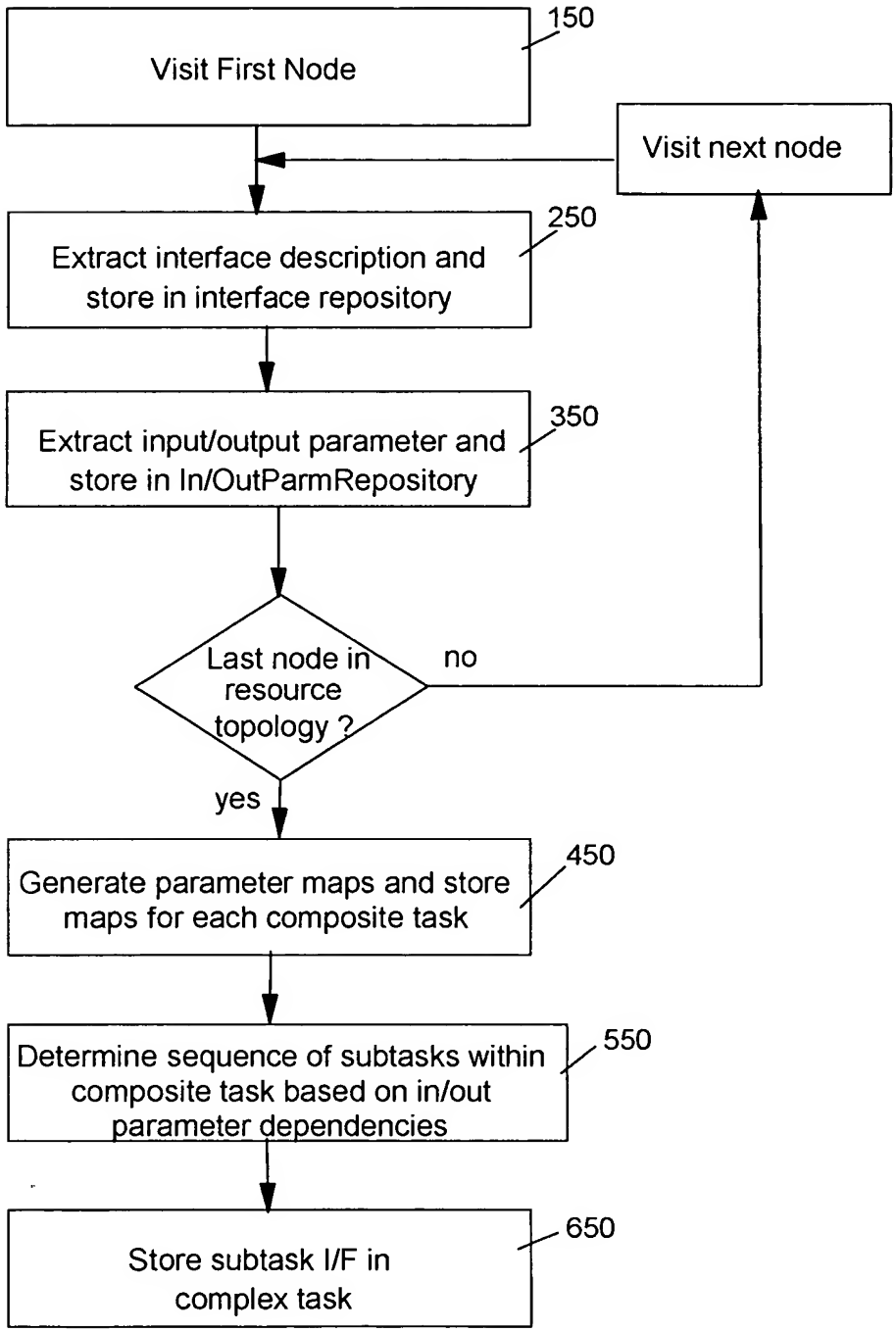
Visit First Node
150
Visit next node
Extract interface description and store in interface repository
250
Extract input/output parameter and store in In/OutParmRepository
350
Last node in resource topology ?
no
yes
Generate parameter maps and store maps for each composite task
450
Determine sequence of subtasks within composite task based on in/out parameter dependencies
550
Store subtask I/F in complex task
650

FIG. 7